

REMARKS/ARGUMENT

Claims 1 and 15 have been amended to require Cr content of 0.51-2.5%. Support for this limitation exists, *inter alia*, at Table 1, par. [0034], example G (0.51%) and par. [0021], line 10 (2.5%).

Claims 2, 12 and 16 have been amended in a non-limiting manner.

Claim 14 has been amended to require a more specific Cr content, support for which exists at par. [0021], line 11.

Claims 1-18 are currently pending.

The Office Action rejected the pending claims under 35 U.S.C. § 103 as obvious over JP 2000-337333 (“Ibaraki”) in view of U.S. patent application publication no. 2002/0179207 (“Koike”). In view of the following comments, Applicants respectfully request reconsideration and withdrawal of this rejection in view of the following comments.

As explained at par. [0021], lines 2-5 of the present specification, Cr is effective in preventing precipitation of proeutectoid cementite.

As demonstrated in the examples of the present application, incorporation of Cr into the claimed steel products in the required amounts yields an improved steel product as compared to those steels containing less Cr. More specifically, examples A, D, G and H in the present application, all of which contain at least 0.51%, are steel products having improved relaxation resistance compared to steels having less than the required amount of Cr (see, for example, examples K and L). Steel M is not relevant for purposes of this comparison because steel M is martensite steel (see, par. [0044]).

Furthermore, the present specification demonstrates that bolts having less than 0.55% Si are inferior, even if such bolts are subjected to bluing treatments within the claimed temperature ranges. It also demonstrates that bolts which do not undergo bluing treatments are inferior, even if such bolts contain 0.55% or more Si.

More specifically, pars. [0045] and [0046] of the present application, along with figure 4 of the present application, demonstrate that bolts having less than 0.55% Si or bolts which do not undergo bluing treatments possess inferior relaxation resistance properties. On the other hand, the present application demonstrates that bolts having 0.55% to 3% Si which undergo bluing treatments possess improved relaxation resistance properties.

The pending claims all require the presence of (1) 0.51-2.5% Cr; and (2) at least 0.55% Si; and (3) bluing treatments. Thus, the pending claims cover those bolts having improved relaxation resistance properties, but exclude those bolts which do not (bolts containing less than 0.51% Cr, less than 0.55% Si and/or which do not undergo bluing treatments).

Ibaraki neither teaches nor suggests the claimed invention. In fact, Ibaraki teaches away from the claimed invention.

First, and perhaps most significantly, Ibaraki teaches away from steel containing more than 0.5% Cr -- Ibaraki teaches that Cr exceeding 0.5% reduces delayed fracture resistance and toughness. (See, for example, par. [0020]). In stark contrast, the pending claims require the presence of at least 0.51% Cr. One of ordinary skill in the art, following Ibaraki, would be led away from the present invention for at least the reason that Ibaraki would lead to a steel product having too little Cr.

Second, Ibaraki does not relate to bluing treatments in any way. This is an additional reason Ibaraki would not lead one of ordinary skill in the art to the claimed invention.

Koike cannot compensate for Ibaraki's fatal deficiencies -- Koike neither teaches nor suggests the claimed invention and, in fact, teaches away from the claimed invention.

First, like Ibaraki, Koike is fatally deficient because it teaches away from steel containing more than 0.5% Cr -- Koike teaches that Cr exceeding 0.5% does not further reduce proeutectoid cementite. (See, for example, pars. [0034]-[0035]). Thus, Koike would not motivate one of ordinary skill in the art to ignore Ibaraki's express teaching to use less than 0.5% Cr. In other words, the combination of applied references would not lead to a steel product having the required Cr content and, thus, cannot constitute the basis for a proper rejection given that one of the required elements is lacking from their combination.

Second, Koike, at pars. [0025]-[0026], expressly limits Si content to 0.5%. In this regard, Koike explains that "the excessive Si content is likely to lower the ductility as well as the cold heatability of the steel wire," and then indicates that preferred Si content is 0.1% or 0.05%. (Par. [0026]). Furthermore, comparative example F in Koike contains 0.89% Si. Table 3 (test no. 8) indicates that this sample "cracked," and thus was unacceptable. The clear teaching of Koike was that Si content greater than 0.5% was unacceptable and should not be used. Thus, not only does Koike teach away from the required Cr content, but he also teaches away from the required Si content.

Given that Ibaraki is silent concerning bluing treatments, nothing in Ibaraki would prompt one of ordinary skill in the art to completely disregard Koike's express teaching that more than 0.5% Si should not be used because in processes relating to bluing treatments because such Si content yields an unacceptable product. Rather, one of ordinary skill in the art, seeking to prepare bolts using methods including a bluing treatment, would follow Koike's disclosure and limit his search to bolts having no more than 0.5% Si. As a result, one of ordinary skill in the art would not produce bolts having improved relaxation resistance properties. Instead, the art would be without such bolts. It is only because the present inventors went directly against Koike's disclosure that they were able to discover bolts having the improved relaxation resistance properties of the present invention.

In sum, the applied art would not have motivated one skilled in the art to arrive at the claimed invention requiring require the presence of (1) 0.51-2.5% Cr; and (2) at least 0.55% Si; and (3) bluing treatments, but rather would have led one skilled in the art away from it. Under such circumstances, the claimed invention cannot be obvious.

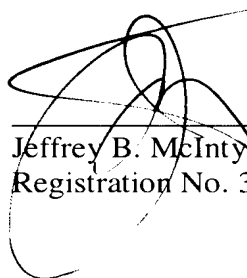
In view of the above, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103.

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Applicants believe that the present application is in condition for allowance. Prompt and favorable consideration is earnestly solicited.

Respectfully submitted,

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